

REMARKS

Claims 1-9 and 11-23 are currently pending in the application. Claims 2, 3, 11-13 and 16-19 are withdrawn by the Examiner as being drawn to a nonelected invention. Claim 7 has been newly cancelled by Applicant. Claim 1 has been newly amended solely for the purposes of more clearly depicting the claimed invention. No new matter is added by these claim amendments, nor have new issues been raised.

35 U.S.C. § 112, 2nd Paragraph- Indefiniteness

Claims 1, 4-9, 14, 15, and 20-23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Specifically, the office action indicates that the recitation of “stringent” in claim 1 is indefinite because stringent conditions are not set forth in the claims or defined in the specification..

The Examiner maintains this aspect of the rejection, contending that the stringent hybridization conditions are exemplary and not limiting. Accordingly, solely for the purposes of advancing prosecution, Applicant has amended Claim 1 by removing without prejudice, previous section c), which recites “a nucleic acid molecule whose complementary strand hybridizes with a nucleic acid molecule from a) or b) under stringent conditions and which encodes a polypeptide which exhibits the biological function of a photoprotein”, thereby rendering this aspect of the rejection moot.

Further, the Office action indicates that the recitation of a degenerate code of such a nucleic acid, as recited in for example claim 1(d), is indefinite since one can not know what the degenerate code of an unknown nucleic acid may be. Applicant considers that one of skill would know what sequences are encompassed by the instant claims given the explicit definition of the term “stringent” with respect to the recited hybridization conditions disclosed in the instant specification, and its well known and established meaning in the art. In other words, because the stringency conditions are set forth in the specification and are standard in the art, one skilled in

the art would know the degenerate code of a nucleic acid that hybridized to nucleic acid encoding SEQ ID NO: 2.

Nevertheless, solely for the purposes of advancing prosecution, Applicant has amended Claim 1 by removing without prejudice, section d), which recites “a nucleic acid molecule which differs from the nucleic acid molecule of c) due to the degeneracy of the genetic code”.

The Office action indicates that the recitation of the term “homology” is indefinite since it is a qualitative term. Applicant notes that the specification discloses that the degree of homology was determined by the Blast method of Altschul et al. (1997) in paragraph 28 of the instant specification as published by the USPTO as 20070275377A1, and discloses in paragraph 0234 the complete citation for the Altschul et al. reference, as Stephen F., Thomas L. Madden, Alejandro A. Schaffer, Jinghui Zhang, Zheng Zhang, Webb Miller, and David J. Lipman (1997); Gapped BLAST and PSI-BLAST: a new generation of protein database search programs; Nucleic Acids Res. 25:3389-3402. Because the Altschul et al. reference discloses methods regarding the determination of percent homology that are able to be understood and performed easily by one of skill in the art, Applicant contends that one of skill would be able to easily ascertain what 95% or 65% homology means using the disclosed method.

However, the Examiner indicates that “homology” is the qualitative relatedness of nucleic acids and proteins, while “identity” is quantitative and is a measure of the number of nucleotides or amino acids that are shared between two nucleic acid or amino acid sequences. While not necessarily agreeing with the Examiner, Applicant has amended the instant claims by substituting the terminology “identity” for the term “homology”.

In light of the afore mentioned remarks and amendments to instant claims, Applicant respectfully requests reconsideration and withdrawal of the rejection.

35 U.S.C. § 102

Claims 1, 4-9, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Inouye et al (1993); Cloning and sequence analysis of cDNA for the Ca²⁺ activated photoprotein, clytin. FEBS 315(3):343-346.

Inouye teaches a nucleic acid encoding clytin which shares 50.9% identity with SEQ ID NO:1 and 77.5% identity with SEQ ID NO:2, a vector comprising said sequence, and an oligonucleotide of at least 10 consecutive nucleotides of SEQ ID NO:1.

Applicant respectfully traverses on the grounds that Inouye et al. does not teach a nucleic acid molecule with at least 65% identity with SEQ ID NO:1 as required by the last section of claim 1 as newly amended, and therefore is not anticipatory. As discussed above, Applicant has amended claim 1 to recite the term “identity” in place of the term “homology”.

Further, Inouye et al. does not teach a) a nucleic acid molecule which encodes a polypeptide which contains the amino acid sequence disclosed by SEQ ID NO: 2; nor b) a nucleic acid molecule which contains the sequence depicted by SEQ ID NO: 1, nor c) a nucleic acid molecule which exhibits a sequence identity along its full length with SEQ ID NO: 1 of at least 95% and encodes a polypeptide which has the biological function of a photoprotein, (formerly part e) of Claim 1. As discussed above, Applicant has removed previous parts c) and d) of Claim 1 without prejudice.

Applicant has cancelled, without prejudice, claim 7 which is directed to an isolated oligonucleotide having more than 10 consecutive nucleotides which is identical or complementary to SEQ ID NO:1, thereby rendering the rejection of claim 7 moot.

The Examiner had included Claims 1(e) and 1(f) (now Claims 1(c) and 1(d)) in the rejection due to the asserted ambiguity in the definition of “homology”, asserting that one would be unable to determine which parts are homologous. However, Applicant has replaced the recitation of “sequence homology” with “sequence identity” as discussed above. In light of the amendments to the instant claims and above remarks, Applicant respectfully requests reconsideration and withdrawal of the rejection.

Claims 8, 20, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Stults et al. (1997; USP 5,648,218) as evidenced by Inouye et al. (1993; Cloning and sequence analysis of cDNA for the Ca²⁺-activated photoprotein, clytin. FEBS 315(3): 343-346). The Examiner alleges that Stults et al. teach a composition comprising a sulphydryl-activated photoprotein coupled to a maleimide activated binding reagent, where said photoprotein is clytin. However, Stults et al. does not teach that their clytin photoprotein has the sequence required by the instant claims, since no sequence information or reference is taught by Stults et al.

Claim 8 and dependent claims 20, 22 and 23 are drawn to a polypeptide which is encoded by a nucleic acid sequence as claimed in claim 1.

Further, the teachings of Inouye et al. do not make up for this difference, since Innouye does not meet the structural requirements of the instant claims as discussed in the traversal of the rejection of claim 1 by above. In other words, since none of the nucleic acids of claim 1 are anticipated by Inouye et al., as discussed above, the proteins encoded by the nucleic acids taught by Inouye do not read on the instant claims.

Applicant notes that Innouye et al.'s teaching of a nucleic acid comprises at least 10 consecutive nucleotides from SEQ ID NO: 1, has no bearing on the instant claims which depend from claim 1, since claim 1 does not recite such a limitation. .

Claims 1, 4-9, 14, 15, 20, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Foti et al. (priority to October 21, 2002; USP 7,601,805) as evidenced by Inouye et al. (1993; Cloning and sequence analysis of cDNA for the Ca²⁺-activated photoprotein, clytin. FEBS 315(3): 343-346).

Foti et al. teach Photin, a chimeric photoprotein wherein amino acids 50-94 of obelin is replaced with amino acids 53-97 of clytin. However, Foti et al. does not teach that their chimeric photoprotein has the sequence required by the instant claims, nor is encoded by a nucleotide with a sequence required by the instant claims.

Further, the teachings of Inouye et al. do not make up for this difference, since Innouye does not meet the structural requirements of the instant claims as discussed in the traversal of the rejection of claim 1 by above. Specifically, Inouye et al. does not teach a nucleic acid molecule with at least 65% identity with SEQ ID NO:1 as required by the last section of claim 1 as newly amended. Further, Inouye et al. does not teach a) a nucleic acid molecule which encodes a polypeptide which contains the amino acid sequence disclosed by SEQ ID NO: 2; nor b) a nucleic acid molecule which contains the sequence depicted by SEQ ID NO: 1, nor c) a nucleic acid molecule which exhibits a sequence identity along its full length with SEQ ID NO: 1 of at least 95% and encodes a polypeptide which has the biological function of a photoprotein, (formerly part e) of Claim 1. As discussed above, Applicant has removed part c) and d) of Claim 1 without prejudice. Thus, Applicant submits that Claim 1 and its dependent claims are not anticipated by the cited references, when viewed independently, nor in combination.

Further, Applicant submits that since none of the nucleic acids of claim 1 are anticipated by Inouye et al., as discussed above, the instant claims, particularly claim 8, directed to a protein encoded by the nucleic acid molecule of claim 1, does not read on proteins encoded by the nucleic acids taught by Inouye.

Applicant notes that Innouye et al.'s teaching of a nucleic acid comprises at least 10 consecutive nucleotides from SEQ ID NO: 1, has no bearing on the instant claims which depend from claim 1, since claim 1 does not recite such a limitation.

Claim 7 has been cancelled by Applicant without prejudice, rendering its rejection moot.

Conclusion

Applicant submits that all claims are allowable as written and respectfully requests early favorable action by the Examiner. If the Examiner believes that a telephone conversation with Applicant's attorney/agent would expedite prosecution of this application, the Examiner is cordially invited to call the undersigned attorney/agent of record.

No fee is believed due. However, should any fees be required to ensure consideration of this response, the Commissioner is authorized to charge Deposit Account 04-1105, Reference No. 83313(303989).

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Respectfully submitted,



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